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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,770	06/21/2006	Masashi Hashimoto	03500.119746	5898
5514 7590 03/10/2010 FITZPATRICK CELLA HARPER & SCINTO 1290 Avenue of the Americas NEW YORK, NY 10104-3800				
EXAMINER				
BOHATY, ANDREW K				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
03/10/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/583,770

**Applicant(s)**

HASHIMOTO ET AL.

**Examiner**

Andrew K. Bohaty

**Art Unit**

1794

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12, 14-16, 21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12, 14-16, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 23, 2010 has been entered.
2. This Office action is in response to the amendment filed February 23, 2010, which amends claims 12, 14, 15, and 16, cancels claims 13 and 17-20, and adds claim 22. Claims 12, 14-16, 21, and 22 are pending.

***Response to Amendment***

3. The rejection of claims 12-20 under 35 U.S.C. 102(a) and under 35 U.S.C. 102(e) as being anticipated by Robello et al. (US 2005/0123787) as set forth in the Office action mailed December 23, 2009 is overcome due to amendment of the claims and cancellation of the claims.
4. The rejection of claims 12-15 under 35 U.S.C. 102(b) as being anticipated by Burn et al. (US 2004/0169463) as set forth in the Office action mailed December 23, 2009 is overcome due to amendment of the claims and cancellation of the claims.

5. The rejection of claims 12-20 under 35 U.S.C. 103(a) as being unpatentable over Robello et al. (US 2005/0123787) as set forth in the Office action mailed December 23, 2009 is overcome due to amendment of the claims and cancellation of the claims.
6. The rejection of claim 21 under 35 U.S.C. 103(a) as being unpatentable over Robello et al. (US 2005/0123787) in view of Kamatani et al. (US 2003/0189216) as set forth in the Office action mailed December 23, 2009 is overcome due to amendment of the claims.
7. The rejection of claims 16, 17, and 19-21 under 35 U.S.C. 103(a) as being unpatentable over Burn et al. (US 2004/0169463) in view of Kamatani et al. (US 2003/0189216) as set forth in the Office action mailed December 23, 2009 is overcome due to amendment of the claims and cancellation of the claims.
8. The rejection of claim 18 under 35 U.S.C. 103(a) as being unpatentable over Burn et al. (US 2004/0169463) in view of Kamatani et al. (US 2003/0189216) and Fukuda et al. (US 2004/0110031) as set forth in the Office action mailed December 23, 2009 is overcome due to cancellation of the claim.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 12, 14-16, 21, and 22 have been considered but are moot in view of the new ground(s) of rejection.

***Information Disclosure Statement***

10. The information disclosure statement filed October 23, 2009 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.
- 11.

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

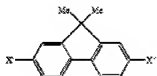
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

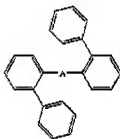
14. Claims 12, 14-16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robello et al. (US 2005/0123787) (hereafter "Robello") in view of Iwawaki et al. (US 2005/0276994) (hereafter "Iwawaki").

15. Regarding claim 12, Robello teaches the following formula, X'-A-X'' (formula (1), paragraphs [0011]-[0012]), where A and X' and X'' have a limited number of choices



(paragraphs [0018]-[0020]), which includes

as the A



component and

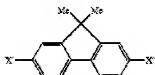
as the X' and X'' components. Robello teaches

the host materials having that fall under the limitations of formula (1) will provide improved efficiency, stability, and spectral characteristics of electroluminescent devices (paragraph [0010]).

16. Robello does not teach that A can be three consecutive fluorene units.

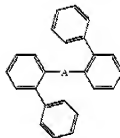
17. Iwawaki teaches an electroluminescent device comprising a light emitting layer, where the light emitting layer comprises a host material and a phosphorescent material (paragraph [0021]). Iwawaki teaches that when the phosphorescent material is a red phosphorescent material the number of consecutive fluorene units needs to be three to five (paragraph [0017]). Iwawaki teaches the when the fluorene units are at this length the oligomer does not crystallize and are stable at the time of evaporation and lead to high efficiency light emitting devices (paragraphs [0037] and [0040]).

18. It would have been obvious to one of ordinary skill in the art at the time the



invention was made to select

as the A component, where the



number of consecutive fluorene units is three, and select

as the X'

and X'' components to produce a material that corresponds to applicant's formula I.

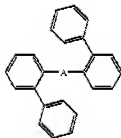
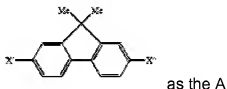
Robello teaches fluorene as a group that corresponds to A and biphenyl as a group for X' and X'' in Robello's formula (1) and Iwawaki teaches that when a red dopant is used it is preferred that the number of consecutive fluorene units is three. The motivation would have been provide a host material that can be used with efficiently with red phosphorescent dopants.

19. Regarding claims 14-16 and 22, Robello teaches an electroluminescent device comprising an anode and a cathode where there is a light emitting layer between the anode and cathode (paragraph [0011]). Further the light emitting layer comprises a host material and a phosphorescent dopant and the host material has a compound of formula (1) from paragraph 15 above (paragraph [0011]). Robello teaches the phosphorescent dopant can be a red phosphorescent material (paragraph [0027]).

20. Claims 12, 14-16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robello et al. (US 2005/0123787) (hereafter "Robello") in view of Suzuki et al. (WO 2004/020372) (hereafter "Suzuki") and Sudhakar et al. (J. Am. Chem. Soc. 2003, 125, 7796-7797) (hereafter "Sudhakar").

21. Regarding claim 12, Robello teaches the following formula, X'-A-X" (formula (1), paragraphs [0011]-[0012]), where A and X' and X" have a limited number of choices

(paragraphs [0018]-[0020]), which includes



component and as the X' and X" components. Robello teaches the host materials having that fall under the limitations of formula (1) will provide improved efficiency, stability, and spectral characteristics of electroluminescent devices (paragraph [0010]).

22. Robello does not teach that A can be three consecutive fluorene units.

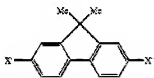
23. Suzuki teaches an organic electroluminescent device comprising a light emitting layer, where the light emitting layer comprises a host material and a light emitting dopant (page 15 line 20 through page 16 line 25). Suzuki teaches the host material is a fluorene containing material where the number of consecutive fluorene units found in the material is preferably 1 to 3 (page 4 line 15 through page 5 line 25). Suzuki teaches



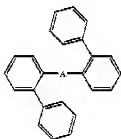
that the fluorene compounds can be used as host materials for phosphorescent materials (examples 78-87). Suzuki teaches that these fluorene host materials can be used to make organic electroluminescent devices with high efficiency and high luminance (page 4 lines 4-8).

24. Sudhakar teaches the number of consecutive fluorene units changes the triplet energy of host materials that use fluorene units (page 7797 left column last paragraph). Sudhakar teaches that the more consecutive fluorene units the low the triplet energy or band gap of the material (page 7797 left column last paragraph). Sudhakar teaches that host materials that have three consecutive fluorene units can be used as a successful host material for red phosphorescent materials (page 7797 right column first paragraph). Sudhakar teaches that these materials are not good host for phosphorescent materials with higher energy levels because of the possible of phosphorescent quenching from the low energy triplet state of the host material (page 7797 right column first paragraph).

25. It would have been obvious to one of ordinary skill in the art at the time the



invention was made to select as the A component, where the number of fluorene units connected to one another is three, and select



as the X' and X'' components to produce a material that corresponds to applicant's formula I. Robello teaches fluorene as a group that corresponds to A and biphenyl as a group for X' and X'' in Robello's formula (1) and Suzuki teaches that the number of fluorene units found in a host material is preferably from 1 to 3. Sudhakar teaches that fluorene host materials that contain three consecutive fluorene units can be used as host materials for red phosphorescent material, but not phosphorescent dopants with higher energy. The motivation would have been provide a host material that can be used with efficiently with red phosphorescent dopants and can be used to make organic electroluminescent device with high efficiency and high luminance.

26. Regarding claims 14-16 and 22, Robello teaches an electroluminescent device comprising an anode and a cathode where there is a light emitting layer between the anode and cathode (paragraph [0011]). Further the light emitting layer comprises a host material and a phosphorescent dopant and the host material has a compound of formula (1) from paragraph 15 above (paragraph [0011]). Robello teaches the phosphorescent dopant can be a red phosphorescent material (paragraph [0027]).

27. Claim 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Robello et al. (US 2005/0123787) (hereafter "Robello") in view of Iwawaki et al. (US

2005/0276994) (hereafter "Iwawaki") as applied to claims 12, 14-16, and 22, further in view of Kamatani et al. (US 2003/0189216) (hereafter "Kamatani").

28. Regarding claim 21, Robello in view of Iwawaki does not teach the use of the electroluminescent device in a display apparatus.

29. Kamatani teaches that a display apparatus comprising an organic electroluminescent device (paragraphs [0108]-[0121]) to provide a lightweight flat-panel display with energy saving performance and high visibility (paragraph [0113]).

30. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electroluminescent device, of Robello in view of Iwawaki, to be contained in a display apparatus. The motivation would be to provide a lightweight flat-panel display with energy saving performance and high visibility.

31. Claim 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Robello et al. (US 2005/0123787) (hereafter "Robello") in view of Suzuki et al. (WO 2004/020372) (hereafter "Suzuki") and Sudhakar et al. (J. Am. Chem. Soc. 2003, 125, 7796-7797) (hereafter "Sudhakar") as applied to claims 12, 14-16, and 22, further in view of Kamatani et al. (US 2003/0189216) (hereafter "Kamatani").

32. Regarding claim 21, Robello in view of Suzuki and Sudhakar does not teach the use of the electroluminescent device in a display apparatus.

33. Kamatani teaches that a display apparatus comprising an organic electroluminescent device (paragraphs [0108]-[0121]) to provide a lightweight flat-panel display with energy saving performance and high visibility (paragraph [0113]).

34. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electroluminescent device, of Robello in view of Suzuki and Sudhakar, to be contained in a display apparatus. The motivation would be to provide a lightweight flat-panel display with energy saving performance and high visibility.

### ***Conclusion***

35. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew K. Bohaty whose telephone number is (571)270-1148. The examiner can normally be reached on Monday through Thursday 7:30 am to 5:00 pm EST and every other Friday from 7:30 am to 4 pm EST.

37. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on (571)272-1515. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

38. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. K. B./  
Andrew K. Bohaty  
Patent Examiner, Art Unit 1794

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art  
Unit 1794